Name: Math Department Date: 7/26/10

Lesson Title: Heptathlon Unit Title: Week 6

Grade Level: 8th

Objectives:

* Students will be able to demonstrate their knowledge on the following skills:
  + Order of operations
  + Adding, subtracting, multiplying, dividing operations
  + Absolute value
  + Opposites
  + Comparisons

Set Induction:

* Take attendance
* Classes must go to the cafeteria
* Opening Ceremony of the first Heptathlon. (location – cafeteria where we have ASM)
* Welcome to the Mathematics Heptathlon. Over the next few days we will be participating in a mathematics tournament to review the material we have learned over the summer to prepare us for the skills test on Thursday.
* Explain the point system to the students – you will be working in teams in each of the activities. But the points will be scored individually, so that in the end we will have a first, second, and third place winners. If your team wins, you will get 3 points, if team gets in second then you will get 2 points, and if your team gets in third place, then you will get 1 point. The top three winners will get cups (gold, silver, and bronze).
* (5 min)

Content Outline and Learning Activities:

* There will be two activities of the day. Operation Ladders and Human Ordering.
* Operation Ladders (location – gymnasium)
  + Students will be working in pairs to advance each ladder step to the end. They will be given multiple expressions on index cards. They will have to evaluate the expression by each step. If they evaluate the step right, then the can advance one ladder, if they evaluate the step wrong, then they must step back one ladder. First pair to the end of the ladder wins.
  + (20 min)
* Human Ordering (location – gymnasium)
  + Students will be placed into groups (numbers must be the same depending on how many students are in class that day). We will tape an index card to each student’s back. They are not allowed to talk. They must order themselves from greatest to least and least to greatest by signaling to each other/using other nonverbal signals in order to order the numbers.
  + (15 min)

Closure:

* Hand out homework – Integer Operations Practice due 7/27/10
* And dismissal to next class
* (5 min)

Evaluation Procedure:

* Homework due 7/27/10 – Integer Operations Practice

Additional Notes:

* Index cards for ladders.
* Ladders made of tape
* Index cards for human ordering
* Tape
* Integer Operations Practice
* Integers Operations Practice Answer Key

Operation Ladders

Expressions and Answer Key

1. (5 \* 8 – 13) + 4 \* 8 =
2. (15/3) – 7 \* 8 + 16 =
3. -3 \* (-4) – 12 \* 5 =
4. (4 / 2 + 19) – 12 + (6 / 2) =
5. 6 + (6 + 4 \* 5) – (10 – 18 – 3) =
6. 17 \* (20 – 18) + 3 \* 5 =
7. 8 / (8 \* 13) =
8. 5 + 33 – 12 =
9. 7 \* (6 + 3) + 23 =
10. 23 – 72 + (8 \* 5) =

Human Ordering

Integers and Ordering

1. Order the following integers from greatest to least
   1. 14, -2, 27, opposite of 4, 13, |6|

27, 14, 13, |6|, -2, opposite of 4

* 1. |-36|, 53, -100, 1000, 6, opposite of |-3|

1000, 53, |-36|, 6, opposite of |-3|, -100

* 1. -12, opposite of -12, 45, -3, -2, 0

45, opposite of -12, 0, -2, -3, -12

* 1. 15, |14|, |-13|, 0, 8, -5

15, |14|, |-13|, 8, 0, -5

* 1. 52, opposite of -54, 36, -1, 0, 9

Opposite of -54, 52, 36, 9, 0, -1

1. Order the following integers from least to greatest
   1. -13, opposite of 6, |-4|, 5, 18, -1000

-1000, -13, opposite of 6, |-4|, 5, 18

* 1. 42, -3, 18, 22, 56, -38

-38, -3, 18, 22, 42, 56

* 1. |3|, |19|, opposite of |10|, -6, 5, |6|

Opposite of |10|, -6, |3|, 5, |6|, |19|

* 1. 7, -8, opposite of -8, 13, |90|, -1

-8, -1, 7, opposite of -8, 13, |90|

* 1. 41, 18, 89, -3, opposite of |-7|, 0

Opposite of |-7|, -3, 0, 18, 41, 89

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Integer Operations Homework

(more on back)

1. Evaluate the following expressions using the order of operations (PEMDAS)
   1. 15 \* 3 – 42 + 18
   2. (3 \* 8 – 2) + (18 / 3)
   3. 4 \* 8 + (32 \* 4) – 6

* 1. 18 / 9 + 13 \* 3 – 2
  2. 25 \* 4 / 10 – (3 \* 7)

1. Compare the following integers (<, >, or =)
   1. Opposite of 13 \_\_\_\_\_ -5 + -3
   2. |19| \_\_\_ 20 – 13
   3. 3 \_\_\_ opposite of |-3|
   4. |-1| \_\_\_ opposite of -1
2. Order the following integers from least to greatest
   1. 9, -15, |7|, opposite of 1
   2. -4, 18, -23, 45, |2|
   3. 32, 17, -2, |90|, 0
   4. 15, opposite of |15|, -4, -42, 3

Name: Answer Key

Date: due 7/27/10

Integer Operations Homework

(more on back)

1. Evaluate the following expressions using the order of operations (PEMDAS)
   1. 15 \* 3 – 42 + 18
   2. (3 \* 8 – 2) + (18 / 3)
   3. 4 \* 8 + (32 \* 4) – 6

* 1. 18 / 9 + 13 \* 3 – 2
  2. 25 \* 4 / 10 – (3 \* 7)

1. Compare the following integers (<, >, or =)
   1. Opposite of 13 \_\_-13\_\_ -5 + -3
   2. |19| \_>\_ 20 – 13
   3. 3 \_>\_ opposite of |-3|
   4. |-1| \_=\_ opposite of -1
2. Order the following integers from least to greatest
   1. 9, -15, |7|, opposite of 1

-15, opposite of 1, |7|, 9

* 1. -4, 18, -23, 45, |2|

-23, -4, |2|, 18, 45

* 1. 32, 17, -2, |90|, 0

-2, 0, 17, 32, |90|

* 1. 15, opposite of |15|, -4, -42, 3

-42, opposite |15|, -4, 3, 15

Name: Math Department Date: 7/27/10

Lesson Title: Heptathlon Unit Title: Week 6

Grade Level: 8th

Objectives:

* Students will be able to translate verbal expressions to algebraic expressions
* Students will be able to demonstrate their knowledge on the coordinate plane by plotting points on a giant coordinate plane through an activity.

Set Induction:

* Math teachers of each core team will collect the homework from their respective students from last night – Integers Practice.
* classes will go over to the cafeteria
* Opening meeting before we start the events of the day… we will be completing two events today called Translations and Grids. Remind students about the scoring, and even though we are working in teams, we will be scoring points individually for the final tally.
* (6 min)

Content Outline and Learning Activities:

* Two events today. Translations and Grids
* Translations (location – cafeteria)
  + Students will work in pairs to translate verbal expressions into algebraic expressions. Each pair will be given a worksheet with expressions on it. The students must translate each of the statements as fast and as accurately as they can. The first team done and has all the problems answered correctly wins first place.
  + (18 min)
* Grids (location – gymnasium)
  + Students will be put onto 4 teams of equal numbers (depends on how many students missing and we will try to do no more than 6 on a team). There will be 4 coordinate planes on the floor made using painters tape for each team (each teacher to one plane). We will label the axes (both the x and y axes). Explain to students which quadrant is which and which our two axes are. Each of the four teams will be given a set of 10 points. They will have to plot and label each point on their grid. The first team to plot all the points successfully and the fastest wins. Each team will be given a different set of ten points so that the students will not be able to copy of off each other’s grids
  + (18 min)

Closure:

* Hand out homework due tomorrow 7/28/10 – Translations and the Coordinate Plane
* Dismissal to next class
* (3 min)

Evaluation Procedure:

* Translations and the Coordinate Plane homework due tomorrow 7/28/10

Additional Notes:

* Translations worksheets
* Translation worksheets answers
* Painter’s tape
* Index cards for each point (4 different sets of points for the four different teams)
* Algebraic Expressions and the Coordinate Plane homework
* Algebraic Expressions and the Coordinate Plane homework answer key

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Translations

Directions: Translate the following verbal expressions into algebraic expressions.

1. Seven more than five times a number
2. 18 less than eight multiplied by a number
3. Eighteen added to a number C
4. Fifteen minus a number E
5. Six divided by a certain number
6. Thirteen plus three times a number
7. A number squared plus ten
8. Four less than a number multiplied by three
9. Eighty-four minus a number times five
10. Sixteen more than a number B

Name: Answer Key

Date: 7/27/10

Translations

Directions: Translate the following verbal expressions into algebraic expressions.

1. Seven more than five times a number

5x + 7

1. 18 less than eight multiplied by a number

8x – 18

1. Eighteen added to a number C

18 + C

1. Fifteen minus a number E

15 – E

1. Six divided by a certain number

6 / x

1. Thirteen plus three times a number

13 + 3x

1. A number squared plus ten

X2 + 10

1. Four less than a number multiplied by three

3x – 4

1. Eighty-four minus a number times five

84 – 5x

1. Sixteen more than a number B

16 + B

Grids – Points on Coordinate Plane game

Team 1: Team 2: Team 3: Team 4:

(3, 8) (5, -5) (7, 14) (-7, 14)

(-4, -13) (6, 3) (-1, 10) (1, -10)

(14, 0) (-8, 14) (9, -5) (0, 0)

(0, 0) (13, 0) (-7, 12) (13, -8)

(-2, -1) (0, -7) (5, -8) (6, -3)

(0, -8) (1, -12) (-11, 0) (-9, 3)

(-1, 1) (-6, -4) (0, 0) (0, 9)

(9, 3) (0, 0) (-3, -14) (-8, 0)

(-4, -6) (-3, -8) (6, 3) (-5, 5)

(5, -5) (-1, -1) (2, -1) (-12, 1)

Points plotted on pieces of graph paper (see attached)

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Algebraic Expressions and the Coordinate Plane Homework

1. Translate the following verbal expressions into algebraic expressions
   1. A number tripled plus five
   2. Eight more than three times a number
   3. Six less than a number E
   4. Twenty-five minus R
   5. Seven less than five times a number
2. Evaluate the following algebraic expressions when a = 3, b = -2, and c= -10
   1. a + b – c
   2. a\*b + a
   3. c / b + ac
   4. ab + ac
3. Draw a coordinate plane on the back of this paper. Label the x and y axes, label the origin, and plot and label the following points
   1. (3, 5)
   2. (7, 6)
   3. (-2, 8)
   4. (-4, -1)
   5. (0, 0)

Name: Answer Key

Date: 7/28/10

Algebraic Expressions and the Coordinate Plane Homework

1. Translate the following verbal expressions into algebraic expressions
   1. A number tripled plus five
   2. Eight more than three times a number
   3. Six less than a number E
   4. Twenty-five minus R
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   1. (3, 5)
   2. (7, 6)
   3. (-2, 8)
   4. (-4, -1)
   5. (0, 0)

Name: Math Department Date: 7/28/10

Lesson Title: Heptathlon Unit Title: Week 6

Grade Level: 8th

Objectives:

* Students will be able to solve one and two step equations
* Students will be able to use the distributive property to solve equations
* Students will be able to solve word problems

Set Induction:

* Take attendance
* Collect homework from students – Algebraic Expressions and the Coordinate Plane
* Classes will go over to the cafeteria.
* Opening meeting of Heptathlon… we will discuss the two events of the day, Solving equations and Round-A-Bout’s.
* (5 min)

Content Outline and Learning activities:

* Two events of the day – Solving equations and Round-A-Bout’s
* Solving equations (location – cafeteria)
  + Students will be put onto teams (depending on how many students absent, same number per team). Each student on each team will be given one index card with an equation on it. They must solve their equation for the unknown variable. The first student will run to the variable field and find the answer to their equation, when they have the right answer card, the second person may go (after they have solved their equation) to get their card and so on. The first team done with all of the correct variable cards will win.
  + (20 min)
* Round-A-Bout’s (location – cafeteria)
  + Word problem game. Students will be working in pairs. There will be one question on each table in the cafeteria. The students will go around to each table and answer all of the word problems. Students will only have 3 minutes (timed at each table) to answer the questions. When we say the three minutes are over, they must move on to the next question. **Students must write on their paper what number they are answering, otherwise they will not get credit for that question**.
  + (15 min)

Closure:

* Hand out homework – Solving equations practice and word problems due 7/29/10
* Dismissal to next class
* (5 min)

Evaluation Procedure:

* Homework – Solving equations practice and word problems due 7/29/10

Additional Notes:

* Solving equations – equations and answers
* Solving equations – index cards with one equation per student
* Round-A-Bout’s questions and answers
* Round-A-Bouts questions written on construction paper for each table (one question per table, but have three copies of same question taped to the table – make sure to include the question numbers)
* Round-A-Bout’s worksheets for students work and answers
* Solving Equations practice and Word Problems
* Solving Equations practice and Word Problems answers

Solving Equations game

Equations and answers

2(-10 + x) = 0

x / 3 = 3

x – 10 = -5

3(m + 12) = 16

7p = 63

6 = a/4 + 2

3(9x – 7) = -7

-15 = -4m + 5

0 = 4 + n/5

8n + 7 = 31

-9x + 1 = -80

3(-16 + x) = -15

Round-A-Bout’s

Word Problems and Answers

1. Kevin is going to join a swim club. There is a $45 initiation fee. It costs $28 for each month that he is a member. Kevin only has $300 to pay for the membership. For how many months can he be a member? Will he be able to be a member for a full year?
2. You went to the department store for back to school shopping and picked out 6 shirts and 4 pairs of pants with a total worth of $170. When you paid for the clothes, the cashier took $3 off the price of each shirt and $5 off the price of each pair of pants. There was no sales tax. How much did you have to pay?
3. Sally went to the grocery store with $30 in her pocket. She bought 3 items of the same amount. After her purchase, she had only $15 in her pocket. How much was each item? Write an equation to solve this problem.
4. Mark had $70 in the checking account at his bank. He then took out $50 over a total of 5 withdrawals. How much money did Mark take out per each withdrawal? Write an equation to solve this problem.
5. Sue had 10 bags of potato chips. She then gave 2 bags to her friend. How many bags of potato chips does Sue have left? If she ate 2 of the remaining bags of potato chips each day, how many days did it take her to eat the rest of the potato chips?

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Round-A-Bout’s

Directions: Solve each of the five problems on the table. You will only be given 3 minutes per question. **Write down the number of the question you are answering, otherwise you will receive no credit for that answer.**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solving Equations Practice and Word Problems

(there are more questions on the back)

Directions: Solve the following equations.

1. 7x = 3x – 8
2. 5(x + 3) = 18
3. 5 + b = -3
4. -3a + 2 = -1
5. 2(8 + r) = -2
6. m + 12 = 16
7. -9x + 1 = -80
8. x / 3 = 3

Directions: Solve the following word problems.

1. Tickets for a concert were sold for $26 in advance and $31 at the door. 54 tickets were sold in advance. How many tickets need to be sold at the door in order to make $5000?
2. Bob had $60 in his wallet. He bought 3 pairs where each pair of sock cost the same amount. After buying the socks, Bob only had $45 left. How much did he spend per pair of socks? Write an equation to solve this problem.
3. Sue ate 15 bananas over a total of 5 days. If she ate 2 on the first day, 3 on the second day, 4 on the third day, and 3 on the fourth day, how many did she eat on the fifth day? Write an equation to solve this problem.

\*\*Now, think of one question that you have for the skills test that we can go over in class tomorrow. You must come up with a question to ask your teacher. If you have no questions about the material, think of a question about math or another related topic. Write in the space below.

Name: Answer Key

Date: 7/29/10

Solving Equations Practice and Word Problems

(there are more questions on the back)

Directions: Solve the following equations.

1. 7x = 3x – 8
2. 5(x + 3) = 18
3. 5 + b = -3
4. -3a + 2 = -1
5. 2(8 + r) = -2
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Name: Math Department Date: 7/29/10

Lesson Title: Heptathlon Unit Title: Week 6

Grade Level: 8th

Objectives:

* Students will be able to manipulate equations into slope-intercept form
* Students will be able to identify slope, x and y intercepts from slope-intercept form
* Students will be able to evaluate lines using t-tables
* Students will be able to graph lines using t-tables

Set Induction:

* Take attendance
* Teachers will collect homework from last night – Solving equations and Word Problems
* Classes will go to the cafeteria
* Opening meeting of the Heptathlon (location – cafeteria) – final day of the Heptathlon. Last event today will be slope-intercept form
* (5 min)

Content Outline and Learning Activities:

* Slope-intercept form (location – gymnasium)
  + Students will work in pairs for this event. They will be given a worksheet to complete as partners. First, the students must manipulate the equations into slope-intercept form

(y = mx + b). Then they will be asked to find the x and y intercepts of each equation, then fill out a t-table of points for each line, and then graph the line by plotting their points on a coordinate plane on the gymnasium floor (using index cards and tape to connect the points – they must label each line to get credit for the question). The questions will be worked through like a relay. All pieces must be complete before moving on to the next question. The goal is the first team to be done with the worksheet and the graphs (correctly).

* + (23 min)
* Students will get into their core teams and students will be given the remaining time to have any last questions answered before the skills test. Student’s questions will be with their homework from last night. (15 min)

Closure:

* Handout homework due 7/30/10 – Teacher Evaluation
* Dismissal to next class (2 min)

Evaluation Procedure:

* Teacher Evaluation due 7/30/10

Additional Notes:

* Slope-Intercept form questions
* Slope-intercept form answers
* Index cards (students will write points and plot on coordinate plane)
* tape
* Teacher Evaluation

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slope-Intercept Form Activity

Directions: First manipulate the equations into slope intercept form, then find the slope, x-intercept, and y-intercept of the line. Then complete the t-table in order to find points on how to draw the line. Use the index cards and tape to draw the line on the coordinate plane. Find all pieces for each equation before moving on to the next equation.

1. y = 3x + 5x – 2

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

1. 4y – 3y = -2x + 8

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

1. y = 3(x + 6)

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

1. y + 8 = 2x – 4x + 3

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

1. 3x + y = -5x + 3

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

Name: Answers

Date: 7/29/10

Slope-Intercept Form Activity

Directions: First manipulate the equations into slope intercept form, then find the slope, x-intercept, and y-intercept of the line. Then complete the t-table in order to find points on how to draw the line. Use the index cards and tape to draw the line on the coordinate plane. Find all pieces for each equation before moving on to the next equation.

1. y = 3x + 5x – 2

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

1. 4y – 3y = -2x + 8

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

1. y = 3(x + 6)

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

1. y + 8 = 2x – 4x + 3

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

1. 3x + y = -5x + 3

|  |  |
| --- | --- |
| x | y |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Slope =

x-intercept =

y-intercept =

Teacher Evaluation

Directions: Answer all of the following statements. The scale runs from agree to disagree, label on the scale in the range that you feel is appropriate.

1. Teacher was very helpful

Disagree

Agree

1. Class was taught at a good speed

Agree

Agree

Disagree

1. I feel well prepared for the school year

Disagree

1. I feel like I learned something in this class

Agree

Disagree

1. I understand why math is important

Agree

Disagree

Directions: Answer the following questions. Explain your answers.

1. Is there anything you would have liked to study that was not discussed this summer?
2. What do you think your teacher did well?
3. How could your teacher improve this class?

Name: Math Department Date: 7/30/10

Lesson Title: Heptathlon Unit Title: Week 6

Grade Level: 8th

Objectives:

* Students will be able to show their knowledge on the mathematical skills learned this summer by seeing their points earned throughout the Heptathlon.

Set Induction:

* Take attendance
* Teachers will collect evaluations (homework from last night – 7/30/10)
* Classes will come over to the cafeteria for the awards ceremony
* (5 min)

Content Outline and Learning Activities:

* We will hold the awards ceremony for the 2010 Heptathlon. The top three individuals will receive prizes. They will be called up to the stage and given their awards (first place is awarded a gold cup, second place is awarded with a silver cup, and third place is awarded with a bronze cup). After the top three are given their awards we will give out certificates to everyone that has participated in the Heptathlon.
  + (location – cafeteria were we have ASM)
* With all of the students (all four teams), have each student say something they learned over the past 6 weeks at Summerbridge that will help them in their math classroom at school in the fall.
* (15 min)

Closure:

* N/A

Evaluation Procedure:

* N/A

Additional Notes:

* Collect evaluations
* Three cups for awards
* Heptathlon certificates for each student